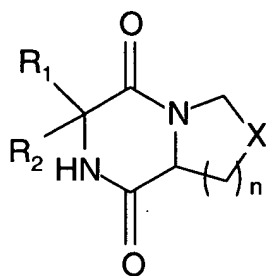The following is a listing of the latest version of the claims. This listing replaces all prior listings thereof.

1-11. (Canceled)

12. (Currently Amended) A method of providing neuroprotection to a subject resulting from either brain or spinal cord trauma or stroke comprising administering to a subject in need of such treatment an effective amount of a compound having the formula:

or a pharmaceutically acceptable salt or hydrate thereof, wherein:

n is an integer from 0 to 3;

X is selected from the group consisting of –S-,-O-,-NR- and CH_2-;

R_1 and R_2 are each independently selected from the group consisting of –H, -OR,-SR, -NRR, -NO$_2$, CN, -C(O)OR, -C(O)NRR,-C(NR)NRR, trihalomethyl, halogen, (C_1-C_6) alkyl, substituted (C_1-C_6) alkyl, (C_2-C_6) alkenyl, substituted (C_2-C_6) alkenyl, (C_2-C_6) alkynyl, substituted (C_2-C_6) alkynyl, (C_5-C_{20}) aryl, substituted (C_5-C_{20}) aryl, 5-20 membered heteroaryl, substituted 5-20 membered heteroaryl, (C_6-C_{26}) alkaryl, substituted (C_6-C_{26}) alkaryl, 6-26 membered alk-heteroaryl and substituted 6-26 membered alk-heteroaryl,

or R_1 and R_2 taken together are $-CH_2$-$(CH_2)_m$-CH_2-, where m is an integer from 0 to 6;

each alkyl, alkenyl, alkynyl, aryl, alkaryl, heteroaryl or alk-heteroaryl substitutent

is independently selected from the group consisting of –OR, -SR, --NRR, -CN, -NO$_2$, -C(O)OR,

-C(O)NRR, -C(S)NRR, -C(NR)NRR, halogen and trihalomethyl; and

each is R independently selected from the group consisting of –H, (C$_1$-C$_6$) alkyl,

(C$_2$-C$_6$) alkenyl, (C$_2$-C$_6$) alkynyl, (C$_5$-C$_{20}$) aryl, 5-20 membered heteroaryl, (C$_6$-C$_{26}$) alkaryl and

6-26 membered alk-heteroaryl.

13. (Canceled)

14. (Original) The method of Claim 12, wherein both carbons at positions 3 and 6 of the parent

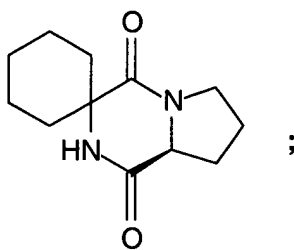bicyclic 2,5-diketopiperazine ring are in the S configuration.

15. (Original) The method of Claim 12, wherein X is –CH$_2$-.

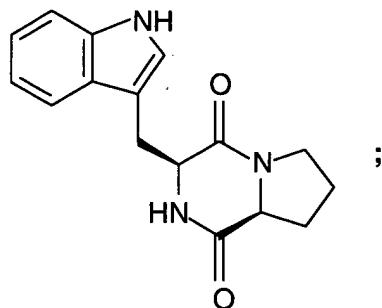16. (Original) The method of Claim 12, wherein n is 1.

17. (Original) The method of Claim 12, wherein said compound is selected from a group
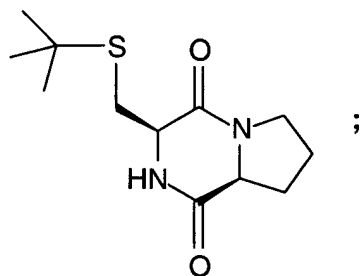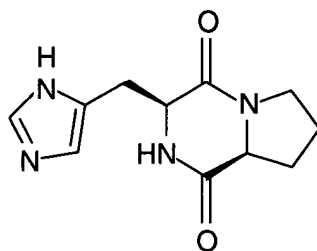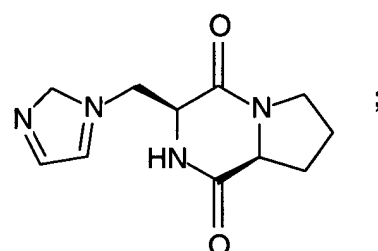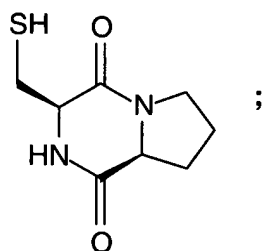
consisting of:

3
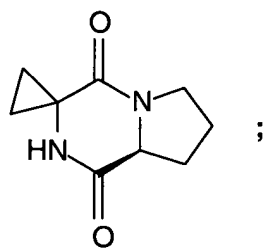
(1a)　　　　　　　(2a)　　　　　　　(3a)

(4a)　　　　　　　(5a)　　　　　　　(6a)

(7a)　　　　　　　(8a)　　　　　　　(9a)

(10a) ; (11a) ; (12a)
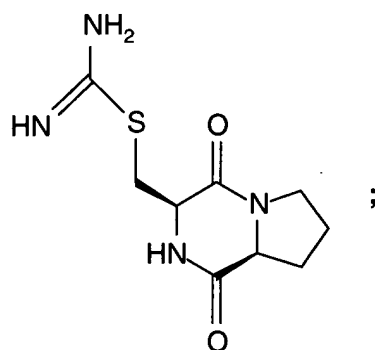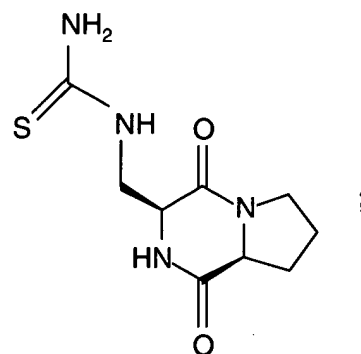
(13a) ; (14a) ; (15a) ;
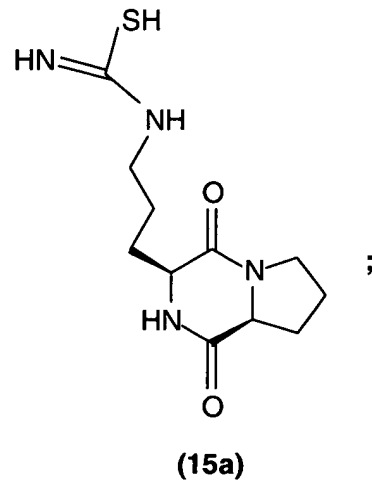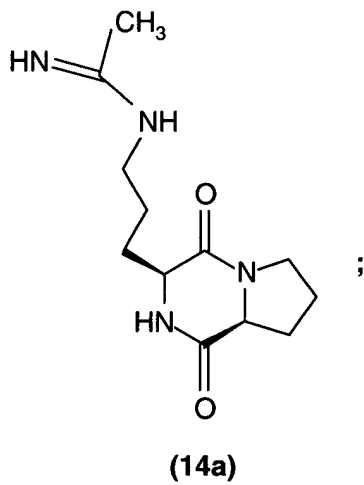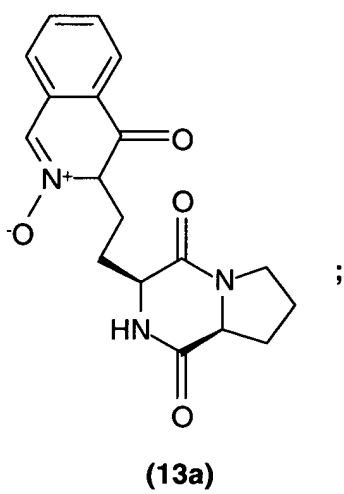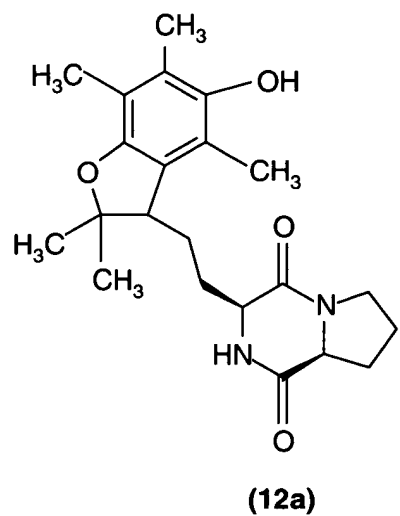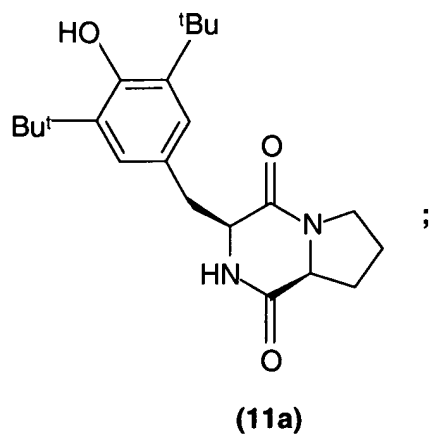
(16a)

18-20. (Canceled)

21. (Original) The method of Claim 12 in which said compound has the following structure:

22. (Canceled)

23. (Original) A method of enhancing cognitive function, said method comprising the step of administering to a subject an effective amount of a compound having the formula:

or a pharmaceutically acceptable salt or hydrate thereof, wherein:

n is an integer from 0 to 3;

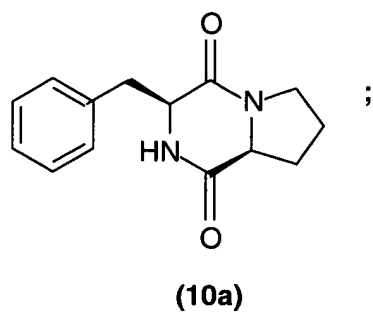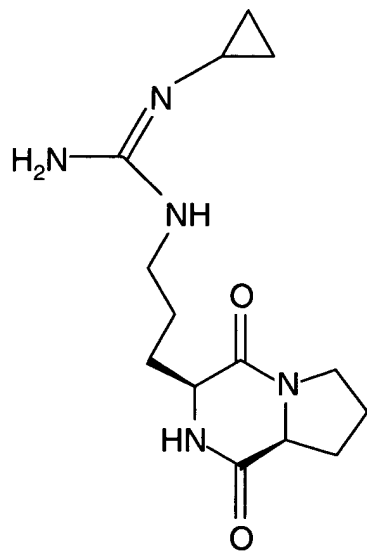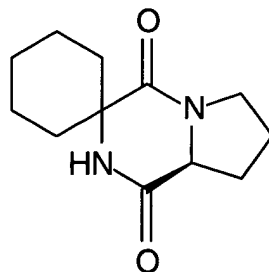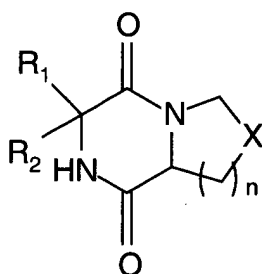X is selected from the group consisting of $-S-$, $-O-$, $-NR-$ and $-CH_2-$;

R_1 and R_2 are each independently selected from the group consisting of $-H$, $-OR$, $-SR$, $-NRR$, $-NO_2$, $-CN$, $-C(O)OR$, $-C(O)NRR$, $-C(NR)NRR$, trihalomethyl, halogen, (C_1-C_6) alkyl, substituted (C_1-C_6) alkyl, (C_2-C_6) alkenyl, substituted (C_2-C_6) alkenyl, (C_2-C_6) alkynyl, substituted (C_2-C_6) alkynyl, (C_5-C_{20}) aryl, substituted (C_5-C_{20}) aryl, 5-20 membered heteroaryl, substituted 5-20 membered heteroaryl, (C_6-C_{26}) alkaryl, substituted (C_6-C_{26}) alkaryl, 6-26 membered alk-heteroaryl and substituted 6-26 membered alk-heteroaryl,

or R_1 and R_2 taken together are $-CH_2-(CH_2)_m-CH_2-$, where m is an integer from 0 to 6;

each alkyl, alkenyl, alkynyl, aryl, alkaryl, heteroaryl or alk-heteroaryl subsistent is independently selected from the group consisting of $-OR$, $-SR$, $-NRR$, $-CN$, $-NO_2$, $-C(O)OR$, $-C(O)NRR$, $-C(S)NRR$, $-C(NR)NRR$, halogen and trihalomethyl; and

each R is independently selected from the group consisting of $-H$, (C_1-C_6) alkyl, (C_2-C_6) alkenyl, (C_2-C_6) alkynyl, (C_5-C_{20}) aryl, 5-20 membered heteroaryl, (C_6-C_{26}) alkaryl and 6-26 membered alk-heteroaryl.
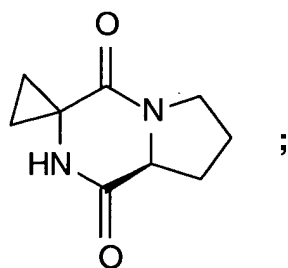
24. (Original) The method of Claim 23, wherein the cognitive function is memory.

25. (Original) The method of Claim 23, wherein both carbons at positions 3 and 6 of the parent bicyclic 2,5-diketopiperazine ring are in the S configuration.
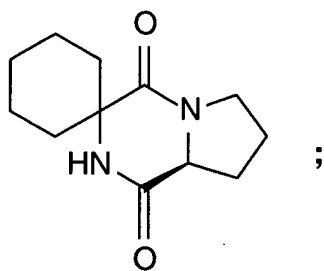
26. (Original) The method of Claim 23, wherein X is $-CH_2-$.

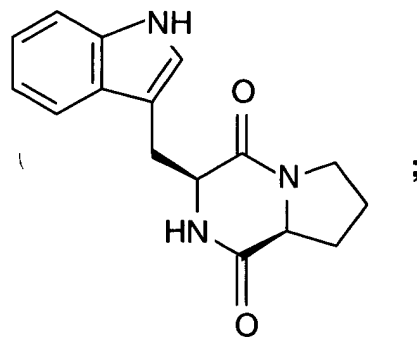27. (Original) The method of Claim 23, wherein n is 1.

28. (Original) The method of Claim 23, wherein said compound is selected from the group consisting of:

(1a)   (2a)   (3a)

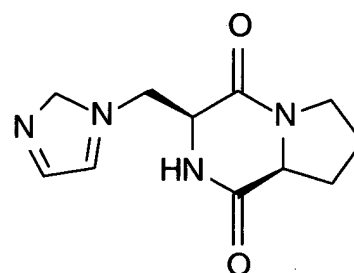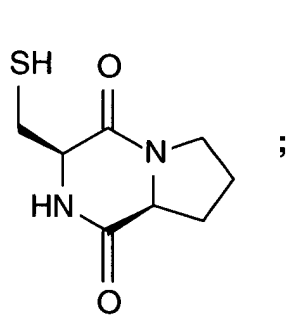(4a)   (5a)   (6a)

(7a)   (8a)   (9a)

O

(10a) ;

HO   'Bu
Bu^t

(11a) ;

CH₃
H₃C
OH
O
H₃C
CH₃
O

(12a) ;

O
N⁺
⁻O
O

(13a) ;

HN
CH₃
NH
O

(14a) ;

HN
SH
NH
O

(15a) ;

N
H₂N
NH
O
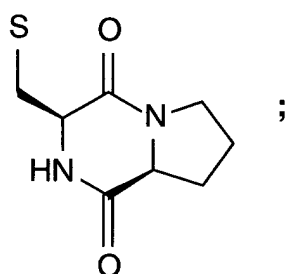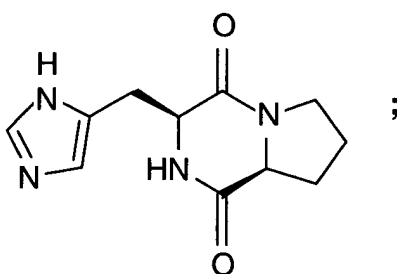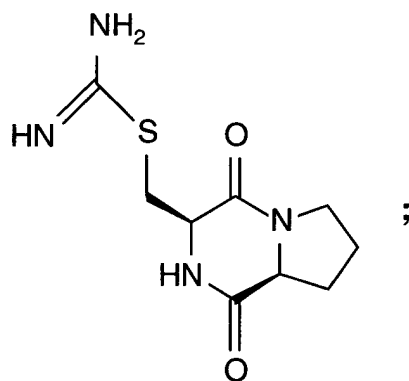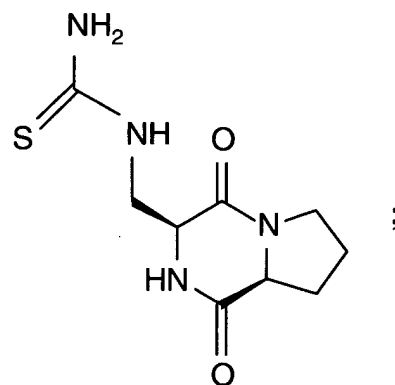
(16a)
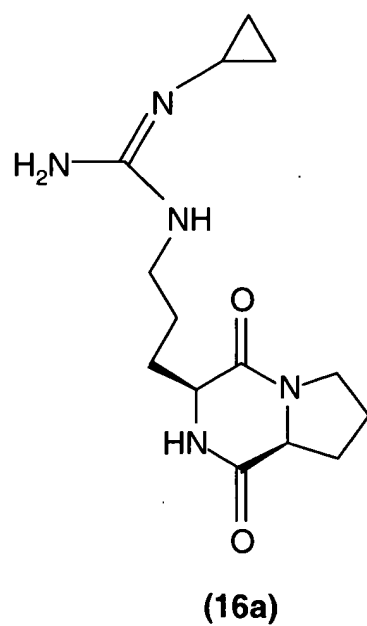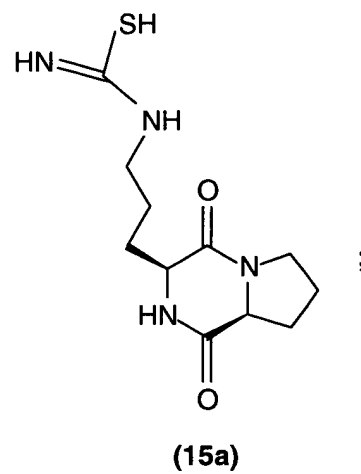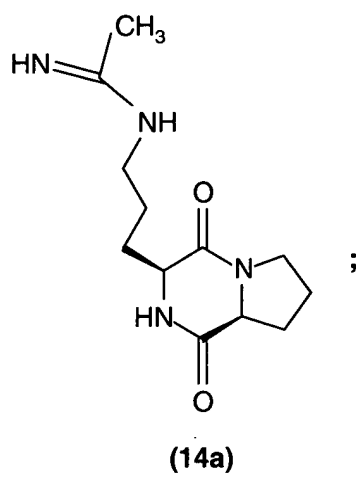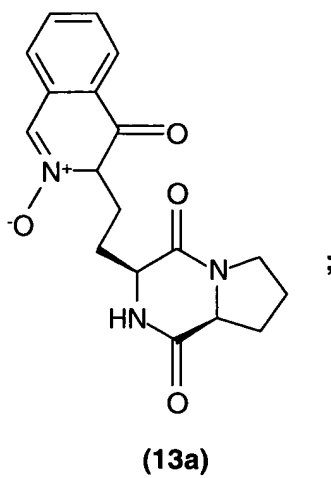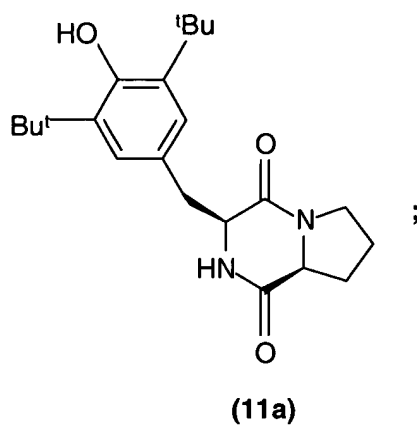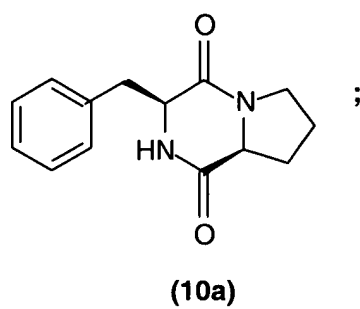
29. (Canceled)

30. (Canceled)

31. (Original) The method of Claim 23 in which said compound has the following structure:
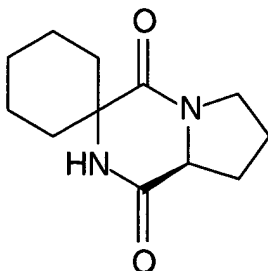
32. (Original) The method of Claim 23, wherein said compound is administered following acute or chronic brain injury.

33-72. (Canceled)

73. (Canceled)

74. (Previously Presented) The method of Claim 12, wherein R_1 is H.

75. (Previously Presented) The method of Claim 74, wherein n is an integer from 1 to 3;

   X is –S-, -O-, -NH- or –CH$_2$-;

   R_2 is –CH$_2$-R$_5$, -CH$_2$-R$_5$ or –CH$_2$-CH$_2$-CH$_2$-R$_5$;

   R_5 is phenyl, imidazolyl other than imidazol-2-yl, indolyl other than indol-3-yl, -SR$_6$, -OR$_6$ or –NHR$_6$; and

   R_6 is –H, (C$_1$-C$_6$) alkyl, (C$_2$-C$_6$) alkenyl, (C$_2$-C$_6$) alkynyl, -C(NH)NH$_2$ or – C(S)NH$_2$.

76. (Currently Amended) The method of Claim 74, wherein n is an integer from 1 to 3;

   X is –S-, -O-, -NH- or –CH$_2$-;

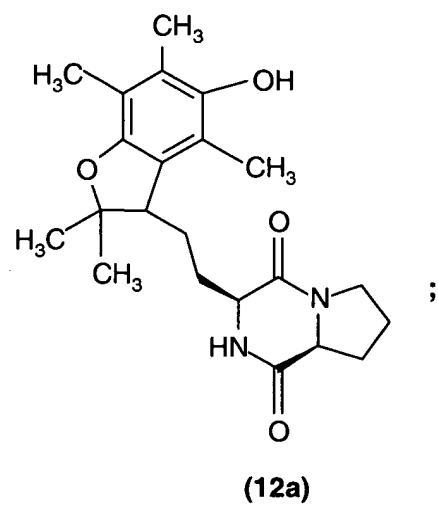 R_2 is –H, (C$_1$-C$_6$) alkyl, (C$_2$-C$_6$) alkenyl, (C$_2$-C$_6$) alkynyl or –(CH$_2$)$_g$-CH$_2$-R$_7$;

   g is an integer from 0 to 5;

R$_7$ is –OR$_8$, -SR$_8$, -NR$_8$R$_8$, -CH(OR$_8$)-CH$_3$, -C(O)R$_8$, -C(O)OR$_8$, -C(O)NR$_8$R$_8$, -S-C(NH)NH$_2$, -NH-C(NH)NH$_2$, -NH-C(S)NH$_2$, phenyl, ~~hydrogxyphenyl~~, <u>hydroxyphenyl</u> imidazolyl, indolyl; and

R$_8$ is –H, (C$_1$-C$_6$) alkyl, (C$_2$-C$_6$) alkenyl, (C$_2$-C$_6$) alkynyl.

77. (Previously Presented) The method of Claim 74, wherein n is an integer from 1 to 3;

X is –S-, -O-, -NH- or –CH$_2$-; and

R$_1$ and R$_2$ taken together are –CH$_2$-(CH$_2$)$_b$-where b is an integer from 0 to 6.

78. (Previously Presented) The method of Claim 23, wherein R$_1$ is H.

79. (Previously Presented) The method of Claim 78, wherein n is an integer from 1 to 3;

X is –S-, -O-, -NH- or –CH$_2$-;

R$_2$ is –CH$_2$-R$_5$, -CH$_2$-CH$_2$-R$_5$ or –CH$_2$-CH$_2$-CH$_2$-R$_5$;

R$_5$ is phenyl, imidazolyl other than imidazol-2-yl, indolyl other than indol-3-yl, -SR$_6$, -OR$_6$ or –NHR$_6$; and

R$_6$ is –H, (C$_1$-C$_6$) alkyl, (C$_2$-C$_6$) alkynyl or –(CH$_2$)$_g$-CH$_2$-R$_7$.

80. (Previously Presented) The method of Claim 78, wherein n is an integer from 1 to 3;

X is –S-, -O-, -NH- or –CH$_2$-;

R$_2$ is –H, (C$_1$-C$_6$) alkyl, (C$_2$-C$_6$) alkenyl, (C$_2$-C$_6$) alkynyl or -(CH$_2$)$_g$-CH$_2$-R$_7$;

g is an integer from 0 to 5;

R$_7$ is –OR$_8$, SR$_8$, -NR$_8$, -NR$_8$,R$_8$, -CH(OR$_8$)-CH$_3$, -C(O)R$_8$, -C(O)OR$_8$, -C(O)NR$_8$R$_8$, -S-C(NH)NH$_2$, -NH-C(NH)NH$_2$, -NH-C(S)NH$_2$, phenyl, hydroxyphenyl, imidazolyl, indolyl; and

R$_8$ is -H-, (C$_1$-C$_6$) alkyl, (C$_2$-C$_6$) alkenyl, (C$_2$-C$_6$) alkynyl.
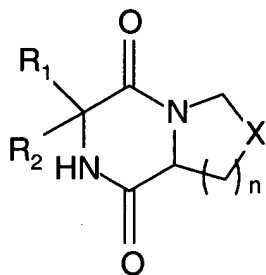
81. (Previously Presented) The method of Claim 78, wherein n is an integer from 1 to 3;

X is –S-, -O-, -NH- or –CH$_2$-; and

R$_1$ and R$_2$ taken together are –CH$_2$-(CH$_2$)$_b$-CH$_2$-, where b is an integer from 0 to

6.

82. (Previously Presented) The method of Claim 12 wherein said compound has the formula:

wherein

X is –CH$_2$-;

n is 1;

R$_1$ is H;

R$_2$ is (CH$_2$)$_q$ R$_{18}$,

q is 0, 1, 2, 3 or 4; and

R$_{18}$ is di-t-butylhydroxyphenyl.

83. (Previously Presented) The method of Claim 82 wherein R$_{18}$ is 3,5-di-t-butyl-4 hydroxy

phenyl.

84. (Previously Presented) The method of Claim 83 wherein q is 1.

85. (Previously Presented) The method of Claim 82 wherein said compound has the formula:

wherein

X is –CH₂-;

n is 1;

R_1 is H, and
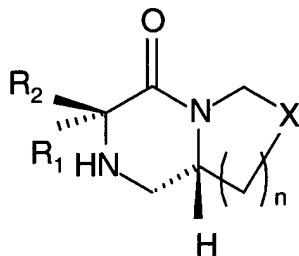
R_2 is $(CH_2)_q R_{18}$;

q is 0, 1, 2, 3, or 4; and

R_{18} is di-t-butylhydroxyphenyl.

86. (Previously Presented) The method of Claim 85 wherein R_{18} is 3,5-di-t-butyl-4-

hydroxyphenyl.

87. (Previously Presented) The method of Claim 86 wherein q is 1.

88. (Previously Presented) The method of Claim 23, wherein said compound has the formula:

wherein

X is –CH₂-;

n is 1;

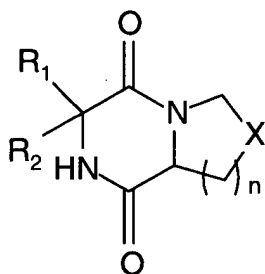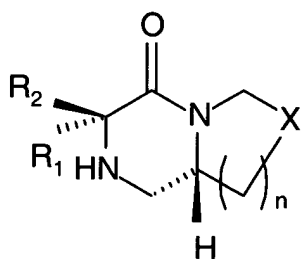R_1 is H;

R_2 is $(CH_2)_q R_{18}$,

q is 0, 1, 2, 3 or ; and

R_{18} is di-t-butylhydroxyphenyl.

89. (Previously Presented) The method of Claim 88 wherein R_{18} is 3,5-di-t-butyl-4-hydroxyphenyl.

90 (Previously Presented) The method of Claim 89 wherein q is 1.

91. (Previously Presented) The method of Claim 23 wherein said compound has the formula:

wherein

X is –CH_2–;

n is 1

R_1 is H and

R_2 is $(CH_2)_q R_{18}$;

q is 0, 1, 2, 3, or 4

R_{18} is di-t-butylhydroxy phenyl.

92. (Previously Presented) The method of Claim 91 wherein R_8 is 3,5-di-t-butyl-4-hydroxyphenyl.

93. (Previously Presented) The method of Claim 92 wherein q is 1.

94. (Previously Presented) The method of Claim 75 wherein R_6 is t-butyl.

95. (Previously Presented) The method of Claim 79 wherein R_6 is t-butyl.